Supplementary Material

A Novel High-Sensitivity Fluorescent Detection Technology for Zearalenone Based on PER-Triggered crRNA Conformational Change and CHA-Coordinated Energy Supply

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1.Experimental section

1.1 Reagents and materials

Oligonucleotide, N,N,N',N-tetramethyl ethylenediamine (TEMED), ammonium persulfate (AP), 30% acrylamide solution (29:1), DEPC-treated water were purchased from Shanghai Sangong Biotechnology Co., Ltd. (Shanghai, China).10 × TBE Buffer, DNA Marker and GelRed were purchased from thermo fisher Co., Ltd (Beijing, China). Microcystin (MC-LR) were purchased from Macklin Inc. (Shanghai, China). Cas12a protein (Lba Cas12a) were purchased from New England Biolabs. Saxitoxin were purchased from Sichuan Hengcheng Zhiyuan Biotechnology Co., Ltd. Zearalenone(ZEN), Ochratoxin A(OTA), Dimethyl Sulfoxide(DMSO)were purchased from Shanghai Aladdin Biochemical Technology Co.,Ltd.Ochratoxin B(OTB),Aflatoxin B_1(ATB_1) were purchased from Sigma-Aldrich(Shanghai)Trading Co.,Ltd.

1.2 Apparatus.

All fluorescence profiles were determined by an Agilent Cary Eclipse spectrophotometer (Agilent, USA). Polypropylene gel electrophoresis (PAGE) was first performed using a DYCZ-24DN electrophoresis apparatus (LIUYI, Beijing, China), followed by shaking with 1 × GelRed, WD-9405F decolorization shaker (LIUYI, Beijing, China). and finally, a Bio-Rad gel imaging system (Bio-Rad, USA) was used to analyze the samples.

2. Supporting table.

The DNA fragments shown in Table S1 were all purified by HPLC. The reagents used in the experiment were all of analytical purity.

Table S1. Nucleotide sequences used in this study

Oligonucleotides name	Sequence （5'to 3'） description
Apt	TTAATCATCTATCTATGGTACATTACTATCTGTAATGTGATATG
T	TGTACCATAGATAGATGAGTTAATG
YL	AATTTCTACTAAGTGTTCATTCAT/i2OMeG/GCCGTTTTTTTTCG GC/i2OMeC/ATGAATGAACACTTAGTAGAAATTATTTTTTGGTTT CCCATTAACTCATCTATCTATGGTACAGTTAATGGGAAACCAA AAAAT
Primer	CAAAAAAT
HP1	AUGAAUGA ACACUUAGUAGAAAUU AUUUUUUGGUUUC UCAAAGGG GACCAAAAAAU AAUUUCUACUAAGUGU AGAUGCUUCUGUCCUAACAGGCUA
HP2	AGGTC CCCTTTGA GAAACCAAAAAAT AATTTCTACTAAGTGT TTTATCAAAGGG
NTS	GGGGTCTTTAGCTTCTGTCCTAACAGGCTAAGT
TS	ACTTAGCCTGTTAGGACAGAAGCTAAAGACCCC
F-Q	FAM-TTATT-BHQ